CLAIMS

1. A method of conducting R chemical reactions, where $R > 1$, in a system which includes an apparatus which provides energy for the chemical reactions, said system also

5 including a parameter selecting unit having a user interface and storage means for carrying a database, said chemical reaction involving one or more chemical species $^X B$ and resulting in a reaction product $^X D$ which includes a functionality δ, where the chemical reaction involves one or more functionalities β in the $^X B$'s which are transformed into δ in $^X D$, each reaction being performed under the influence of one or more corresponding

10 chemical substances A_R, such chemical substances A_R including a chemical functionality α_R being involved in the transformation of the functionality/functionalities β to the functionality δ, said database comprising N sets of associated data, each of the N sets comprising

    i) a set of reaction parameters for a chemical reaction involving the transformation

15   of one or more functionalities $^N \beta$ of chemical species $^N B$ into $^N \delta$ in a product $^N D$ under the influence of one or more chemical substances $^N A$, such chemical substance(s) each including a chemical functionality $^N \alpha$ being involved in the transformation of the functionality $^N \beta$ to the functionality $^N \delta$; and

    ii) functional or structural information about the chemical species $^N B$;

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the method comprising that

* the user provides information to the user interface of the parameter selection unit about the functionality/functionalities β in the chemical species $^X B$;

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* the user provides information to the user interface of the parameter selection unit about the desired transformation of β to δ;

* the parameter selection unit retrieves R sets of associated data (Σ_R) from the database,

30 such sets of associated data being selected so that the functionality/functionalities $^N \beta$ in each set of associated data is/are essentially identical to the functionality/functionalities β in $^X B$ and the functionality $^{MN} \delta$ is essentially identical to δ in the product $^X D$, in order to obtain the R sets of reaction parameters ($^X \Sigma_R$), said R sets of reaction parameters ($^X \Sigma_R$) being accompanied by corresponding information about the chemical substance(s) A_R

under which influence the R reactions should be conducted and information about any additional constituents involved in the chemical reaction;

* an array of R reaction mixtures each comprising a predetermined amount of the

5   chemical substance(s) A_R and the chemical species ^XB and any additional constituents required is prepared according to the sets of reaction parameters;

* each of the R reaction mixtures are treated in the apparatus in accordance with the corresponding set of reaction parameters.

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2. A method according to claim 1, wherein the array of R reaction mixtures is provided from ^XB stock solution(s) and a kit comprising stock solutions of the chemical substance(s) A_R and any additional constituents required.

15 3. A method according to claim 1, wherein the R sets of reaction parameters involves the use of more than one chemical substance A_R.

4. A method according to claim 1, wherein the R sets of reaction parameters involves the use of R chemical substances A_R.

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5. A method according to claim 1, in which the array of R reaction mixtures is prepared by combining the chemical species ^XB with the content of one or more of P containers each comprising a chemical substance A_R including a chemical functionality α_R which is intended to facilitate the transformation of a functionality β to a functionality δ in a

25 chemical reaction involving a chemical species ^XB.

6. A method according to claim 1, wherein the R sets of reaction parameters are provided in the form of control parameters for the apparatus.

30 7. A method according to claim 1, wherein treatment of the R reactions is performed substantially simultaneously.

8. A method according to claim 1, wherein treatment of the R reactions is performed sequentially.

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9. A method according to claim 1, wherein the treatment includes heating.

10. A method according to claim 1, wherein the reaction is a microwave facilitated chemical reaction.

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11. A method according to claim 1, wherein the apparatus comprises a microwave reaction cavity.

12. A kit for use in the method defined in claim 1, said kit comprising P containers each

10 comprising a chemical substance A_R including a chemical functionality α_R which is intended to facilitate the transformation of one or more functionalities β to a functionality δ in a chemical reaction involving one or more chemical species ^XB, said chemical reaction being intended to result in a reaction product ^XD which includes a functionality δ, where the chemical reaction involves one or more functionalities β in the ^XB's which are

15 transformed into δ in ^XD.

13. A kit according to claim 12, which further comprises additional constituents required for the transformation.

20 14. A system for conducting R chemical reactions of the type

$$^XB(\beta) \; \text{-->} \; ^XD(\delta)$$
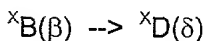
involving one or more chemical species ^XB and resulting in a reaction product ^XD which

25 includes a functionality δ, where the chemical reaction involves one or more functionalities β in the ^XB's which is transformed into δ in ^XD, each reaction being performed under the influence of a corresponding chemical substance A_R, such chemical substances A_R including a chemical functionality α_R being involved in the transformation of the functionality/functionalities β to the functionality δ,

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the system comprises

(a) an apparatus which provides energy for the chemical reactions, said apparatus comprising a reaction cavity and a liquid handler,

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(b) a parameter selecting unit having a user interface means, a search unit means, apparatus control unit means, and storage means for carrying a database, said database comprising N sets of associated data, each of the N sets comprising

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i) a set of reaction parameters for a chemical reaction involving the transformation of a functionality $^N\beta$ of a chemical species ^NB into $^N\delta$ in a product ND under the influence of a chemical substance ^NA, such chemical substance including a chemical functionality $^N\alpha$ being involved in the transformation of the functionality $^N\beta$ to the functionality $^N\delta$; and

ii) functional or structural information about the chemical species ^NB.

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15. A system according to claim 14, further comprising one or more disposable kits comprising P containers each comprising a chemical substance A_R including a chemical functionality α_R which is intended to facilitate the transformation of the functionality β to the functionality δ in the chemical reaction.

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16. A computer readable data carrier loaded with a computer program system for facilitating the method defined in claim 1 in a system as defined in claim 14, said computer program system comprising:

20 * retrieving information via the user interface of the parameter selection unit about the functionality/functionalities β in the chemical species ^XB;

* retrieving information via the user interface of the parameter selection unit about the desired transformation of β to δ;

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* retrieving, via the parameter selection unit, R sets of associated data (Σ_R) from the database, such sets of associated data being selected so that the functionality/functionalities $^N\beta$ in each set of associated data is/are essentially identical to the functionality/functionalities β in ^XB and the functionality $^{MN}\delta$ is essentially identical to δ

30 in the product ^XD, in order to obtain the R sets of reaction parameters ($^X\Sigma_R$), said R sets of reaction parameters ($^X\Sigma_R$) being accompanied by corresponding information about the chemical substance(s) A_R under which influence the R reactions should be conducted and information about any additional constituents involved in the chemical reaction;

* providing instructions to the liquid handler about the preparation of an array of R reaction mixtures each comprising a predetermined amount of the chemical substance(s) A_R and the chemical species $^X B$ and any additional constituents required according to the sets of reaction parameters;

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* providing instructions to the reaction cavity about treatment of each of the R reaction mixtures in the apparatus in accordance with the corresponding set of reaction parameters.